ATARI
COMPUTER
ENTHUSIASTS
WELLINGTON

Wellington Atari Computer Enthusiasts

NEWSLETTER NO.10: SEPTEMBER 1983

Dear Members,

Herewith the September Newsletter. It may be a little shorter than usual but the quality will not be any lower.

Our next meeting will be at 7.30 pm on Wednesday 5 October at the TAB Building on Lambton Quay. At that meeting we will demonstrate WACE Tape #7 (SCREAMING DEMON, ROSE-PLOTS, ROAD-BLOCK, NUMBER PUZZLE, and ANTIC 4 & 5 DEMO). Tapes 1-6, of course, will also be on sale, as will blank tapes. As part of our policy of encouraging indigenous talent, programmes developed by members will be demonstrated (Jeremy Buckley being hopefully only the first). Bruce Goldstone & Jeremy White will be bringing along their "add-on" keyboards for the Atari 400. Disk #2 of the Group's library will be presented. Stephen Aranyi will continue his dissertation on Player Missiles, while "Choplifter" and "Atariwriter" will be demonstrated. A full bill!

Would members please remember to return your Member's Survey either at the next club meeting or by post and also to bring the programmes you have typed in for the club's library.

In the last month the club has made very considerable progress. Some of the highlights include:

(a) the installation of the first 48k memory boards manufactured by Paul Satherly of Wanganui. Members wishing to get in on a rather good deal should contact Neil Upton.

(b) Peter Georgiou has placed with the club the 100 programmes he received when his Atari was purchased from England's "Silica Shop".

(c) we have received another of the very good disks put out by our American counterparts, the "Atari Computer Enthuiasts" of Oregon.

(d) we have also purchased one of the educational disks put out by San Mateo County. The programmes are good: your Secretary has never played "Hangman" in French before, while the geographical programmes showed conclusively that the information base used in his degree subjects does not now exist!! These programmes have been placed in the Club Library, which has in all, nearly doubled in the last two months.

(e) Neil Upton has been appointed our "OUT OF TOWN LIASION MEMBER". We are now acquiring a goodly number of out of town members and their interests require proper servicing. Neil's postal address is: 38 FYVIE AVENUE, LINDEN, WELLINGTON. (PHONE 328473)

(f) "ANTIC" magazine has arrived. As most of you know, "ANTIC" is one of the three American magazines exclusively devoted to Atari. Michael Munro, our Print Librarian, has the magazine. Some of the items in the attached supplement are from "ANTIC", and we would draw your attention to the article on the head alignment problem of the Atari Casette Recorder.

One other point, Keith Hobden will be resuming his tutorials on Basic at Thorndon School, beginning next Sunday 2nd October.

Finally we include in this Newsletter the instructions for using "Tiny Text". This is done so that new members can use this good word-processing programme. It is also a hint to our members that they should be writing articles for this Newsletter! Our grateful thanks to those who have already.

Des Rowe
Secretary.

*** SHOPPING (FOR YOUR ATARI) IN SINGAPORE/HONG KONG ***

by Peter Yu

Late in '82, while I was on business in both Singapore & Hong Kong, I brought my expanded 48K ATARI, plus a string of peripherals, plus education programmes and games (must not forget games!). Why, you may ask, should I risk the NIL warranty by buying overseas? The answer is simply "simple economics". The whole package cost me only about 1/3rd before Import Duty (1/2 with the duty paid) to what I would have had to pay for the same items in New Zealand and besides, at the time, some of the software was not available in New Zealand then.

Generally speaking most visitors to Singapore/Hong Kong spend an average of 3 to 7 days only, which is not a lot of time if you have to shop around and still be able to enjoy your holiday there, hence I wish to share with you some of my personal experiences in the DO's and DONT's when shopping for a computer there. Hopefully this information will save you some foot-work, with time to enjoy other activities other than shopping (My wife would like to contest anyone who can suggest better activities while one is in Singapore/Hong Kong!), and of course, least to mention the saving of vitamin "M"!

BEFORE YOU LEAVE FOR YOUR TRIP:

DO try to find out everything on the computer and peripherals that you intend to buy (e.g. voltage use in N.Z., technical details, prices in N.Z., etc..)

DO check with the Customs Dept. for possible import duty, sales tax, import licence required, etc., so that you may add these to the price offered overseas to see if it is still worth your while to buy the item AND bring it back.

ONCE YOU ARE THERE:

DO equip yourself with a calculator to work out the exchange rate so that you know how much a price is in N.Z. dollars, so that you'll know whether it is a good buy.

DON'T buy from the first shops that you happen to find the goods that you want, WAIT (I got 4 different prices, each one lower than the previous, as I walked further away from the tourist area).

DON'T try to shop around on foot (one shopping complex alone in Singapore housed over 100 shops and there are lots of complexes!).

DO "let your finger do the walking" by using the Yellow Pages to find the shops that carry the goods and narrow it down to the best prices offered before you pay them a personal visit.

WHEN YOU ARE IN THE SHOP:

DO ask again that the prices quoted over the phone are for the COMPLETE WORKING MODEL (some will try to sell you the computer and the power adapter seperately, which can work out expensive in the whole).

DON'T let the salesperson talk you into buying a cheaper substitute or any other item(s) than that which you really need.

DO insist on a demonstration of the item that you are buying and make sure that the one demonstrated is the same one that you are taking away with you.

ON PAYING FOR THE GOODS:

DO count out the money infront of the salesperson when paying by cash.

DO insist on the CARD-HOLDERS' RECEIPT when paying by credit card (it has been known for the amount to be altered if the customer leaves this receipt with the shop).

DON'T pre-pay for any goods which are "not readily available". (Personal experience has shown me that "available tomorrow" can stretch to 14 "tomorrows" and you may not have the time to wait, and REFUNDS ARE RARE there.)

Well, as I have said these are but my own personal experiences, if there is any one who is interested in obtaining the names & addresses of the shops where I have found satisfaction, they may contact me at 720-846 (between 2 to 5 p.m. Monday-Friday).

***** BITMAPS *****
(or 255 And All That)

If you are like me and turn to "Footrot Flats" first you will already have seen the "W.A.C.E. BITMAPS" included in this Newsletter. Now your reaction will probably been one of the following:

a) I don't need those.
b) Great, just what I needed.
c) What the $&%#" are these for!

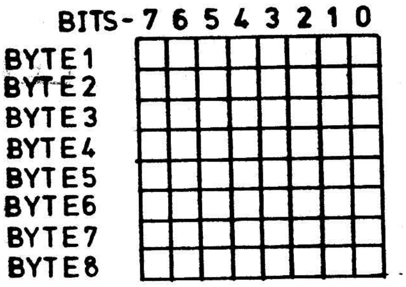
Well for the "a's" amongst you: I'm sorry I bothered you and please could you demonstrate your Character Editor at a future Club Meeting?

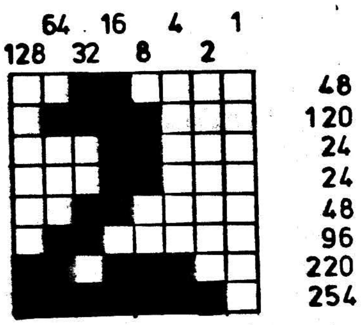
For the "b's" amongst you: no more need to be said, I hope the BITMAPS will speed your character generation.

Now, for the "c's" amongst you an explanation is in order:

The characters (e.g. letters, numbers, symbols) that appear on your computer screen are part of the ATARI CHARACTER SET that comes as a standard part of your computer. This character set is stored away in ROM (Read Only Memory) and is used whenever you type in a character at the keyboard. The character set is made up of 128 different characters, each of which is made up of 8 BYTES. Now each BYTE is made up of 8 BITS which makes 64 BITS per character and a grand total of 1024 BYTES (1K) storage for the character set. While we are on jargon 256 BYTES= 1 PAGE which gives 4 PAGES= 1K. Confused? Hang around, it gets easier.

The 8 BYTES that make up a character are stacked on top of each other to make a grid 8 x 8 as shown below. It is on this grid that the character is drawn (see example). The squares of the grid are given the values 128, 64, 32, 16, 8, 4, 2, and 1 from left to right. The value of each BYTE is then calculated by adding up all the squares in the row which have been filled in.





All very nice but so what? Well the thing is that you don't have to use the character set provided, you can design and use one of your own! All you need to do is sit down with some graph paper, design your characters, use your W.A.C.E. BITMAPS to quickly find the value of each row and then write a program not unlike the one below. Good luck, KWH.

```
10 MEMTOP=256*PEEK(742):REM TOP OF MEMORY
0 CHBAS=256*PEEK(756):REM START OF STANDARD CHARACTER SET
30 FOR BYTE=0 TO 1023:REM FOR EACH BYTE OF CHARACTER SET
40 POKE MEMTOP-1024+BYTE,PEEK(CHBAS+BYTE):REM PUT WHAT'S IN ROM IN RAM
50 NEXT BYTE
60 FOR CHARACTER=1 TO 2:REM FOR EACH NEW CHARACTER
70 READ J:REM GET NUMBER OF CHARACTER TO BE OVER-WRITTEN
80 J=MEMTOP-1024+J*8:REM CALCULATE STARTING POSITION OF THIS CHARACTER IN CHARACTER SET
90 FOR BYTE=J TO J+7:REM FOR EACH BYTE IN CHARACTER
00 READ L:REM GET NEW VALUE AS GIVEN BY BITMAP CHART
10 POKE BYTE,L:REM STORE NEW VALUE MAKING UP NEW CHARACTER
20 NEXT BYTE
30 NEXT CHARACTER
40 GRAPHICS 2
50 POKE 756,(MEMTOP-1024)/256:REM CHANGE POINTER FROM OLD TO NEW CHARACTER SET
60 POSITION 9,3:? #6;CHR$(32+36):REM TOP HALF OF MOA
70 POSITION 9,4:? #6;CHR$(32+37):REM BOTTOM HALF OF MOA
80 POSITION 8,6:? #6;"MOA"
90 DATA 36,48,120,24,24,48,96,220,254
00 DATA 37,127,63,30,22,18,18,34,4
```

"BREAKOUT"

Simple BASIC knock them down game. No trick used. Type it in and see if you can inprove it. L.L.Beh.

```
100 X1=2:X2=37:X3=8:X4=8:Y4=18:X5=1:Y5=
1:S=0:B=5:T=0:H=500:C=0:GOSUB 470:GRAP
HICS 3:POKE 752,1:GOTO 310
110 FOR X=2 TO 37:LOCATE X,Y,Z:IF Z=1
THEN C=C+1
120 NEXT X:IF Y=0 THEN Y=2:GOTO 110
130 IF Y=2 THEN Y=4:GOTO 110
140 IF C>6 THEN GOSUB 310:RETURN
150 S=S+500:FOR R=0 TO 7:FOR I=15 TO 0
 STEP -1:SOUND 0,50,10,I:FOR W=0 TO 5:
NEXT W:NEXT I:SOUND 0,0,0,0
160 ? :? "**BONUS SCORE 500 POINTS**":
NEXT R:GOSUB 310:RETURN
170 IF X4=X3 THEN X5=1:Y5=-1:SOUND 0,1
00,10,14:RETURN
180 IF X4=X3+1 THEN X5=0:Y5=-1:SOUND 0
,100,10,14:GOSUB 270:RETURN
190 IF X4=X3+2 THEN X5=-1:Y5=-1:SOUND
0,100,10,14:RETURN
200 COLOR 4:PLOT X4,Y4:COLOR 1:PLOT X4
-X5,Y4-Y5:FOR I=15 TO 0 STEP -1:SOUND
0,50,10,I:FOR W=0 TO 20:NEXT W:NEXT I
210 COLOR 4:PLOT X4-X5,Y4-Y5:B=B-1:SOU
ND 0,0,0,0:GOSUB 240:X4=X3+1:Y4=19
220 IF X5=0 THEN S=S+5
230 IF X5<>0 THEN S=S+15
240 ? "SCORE        ",:? "   ";S:? "BALL
 LEFT",:? "   ";B:? "BONUS BALL WHEN SC
ORE= ";H
250 IF S>=H THEN B=B+1:T=T+1:H=H+400*T

260 IF B=0 THEN ? "GAME ENDED. YOUR SC
ORE= ";S:? "PRESS Fire TO PLAY":GOSUB
290:F=1:GOSUB 310:B=5:S=0:T=0:H=500
270 IF PEEK(19)>59 THEN F=1:C=0:Y=0:SO
UND 0,0,0,0:GOSUB 110
280 RETURN
290 IF STRIG(0)<>0 THEN GOTO 290
300 RETURN
310 COLOR 1:PLOT X1,0:DRAWTO X2,0:PLOT
 X1,2:DRAWTO X2,2:PLOT X1,4:DRAWTO X2,
4
320 POKE 19,0:IF F=1 THEN RETURN
330 COLOR 2:PLOT X3,19:PLOT X3+1,19:PL
OT X3+2,19:SOUND 0,125,10,4
340 COLOR 3:PLOT X4,Y4
350 IF Y4=18 THEN Y5=-1:POKE 77,0:SOUN
D 0,100,10,14:GOSUB 170:SOUND 0,0,0,0
360 IF X4=X1 THEN X5=1
370 IF X4=X2 THEN X5=-1
380 IF Y4=0 THEN Y5=1:X5=0
```

```
400 IF STICK(0)<8 THEN X3=X3+1:COLOR 4
:PLOT X3-1,19:IF X3>X2 THEN X3=X2
410 IF STICK(0)>8 AND STICK(0)<15 THEN
 X3=X3-1:COLOR 4:PLOT X3+3,19:IF X3<X1
-2 THEN X3=X1-2
420 LOCATE X4+X5,Y4+Y5,Z:IF Z=1 THEN C
OLOR 4:PLOT X4+X5,Y4+Y5:SOUND 0,75,10,
14:GOSUB 220:Y5=1
430 IF Y5=1 THEN X5=0
440 X4=X4+X5:Y4=Y4+Y5:COLOR 4:PLOT X4-
X5,Y4-Y5
450 SOUND 0,0,0,0
460 GOTO 330
```

```
470 GRAPHICS 0:POKE 752,1:? "THIS L.L.
BEH VERSION OF **Breakout**":? :? "USE
 JOYSTICK 1 TO MOVE PADDLE L OR R."
480 ? "  PADDLE IS COLORED YELLOW."
490 ? :? "YOU ARE PROVIDED WITH FIVE B
ALLS.":? "  BALL IS COLORED BLUE."
500 ? :? "THE BRICKS ARE COLORED PINK.
":? :? "YOU GET 5 POINTS IF YOU KNOCKE
D DOWN    A BRICK WITH STRAIGHT BALL,"

510 ? "  15 POINTS IF WITH ANGLED BALL
."
520 ? :? "YOU GET A BONUS BALL AT 500
POINTS,     900, 1700, 2900, ETC, ETC.
"
530 ? :? "YOU GET 500 POINTS BONUS IF
ONLY 6      BRICKS ARE LEFT AFTER 5 mi
n"
540 ? :? :? "PRESS fire TO BEGIN"
550 IF STRIG(0)<>0 THEN 550
560 RETURN
```

***** TINY TEXT *****

When the Group purchased, on your behalf, some discs from ACE, TINY TEXT was amongst the programs. We on the Newsletter editorial staff have tried and tested TT extensively over the last couple of months and have now suggested that it be included on Group Club Tape No.3. Which it has been!!!

TINY TEXT allows you to use your ATARI to type letters, notices, articles for publication, etc.. Not only can you type the information in you can change it around, display it in its final form on the screen, output it to a printer, save it to cassette or disc, and load previously saved information from cassette or disc.

GETTING STARTED

First plug a joystick in the extreme left hand socket. Then load up tiny text from the club tape using CLOAD, this should take just over 2 minutes. Then type RUN and press RETURN.

After a couple of seconds delay the LOAD screen should appear. As this is your first use of TT then you will have no information filed away to LOAD so we will come back to this screen later. Press the yellow OPTION key and TT will cycle through the various screens available: EDIT, PRINT, SAVE, DISPLAY, and then back to LOAD. Press the OPTION key until the EDIT screen appears again, this EDIT screen is the one you will be using most of the time. Press, as instructed, the yellow START key to begin.

The messages at the top of the screen will change to "some number" FREE and INSERT TEXT OR ... PRESS SELECT TO EDIT. The "some number" indicates how much space you have left in memory for your text and will decrease as you enter text.

ENTERING OF TEXT

Start typing in the article you are going to write for the newsletter and the text will appear on the screen in the "WINDOW" between the sets of dotted lines. You can use up to 3 lines before a buzzer indicates that you have run out of room in the window. You can use the cursor arrows, insert, delete, and back space as per normal within the text window. When the window is full, or you run out of things to type, press RETURN and the text will move upwards out of the window. Now continue typing until you are ready to review your text.

CORRECTION OF TEXT

This is where the joystick comes in. To correct (EDIT) text you must move the line of text that has the error in it to the FIRST LINE BELOW THE WINDOW. Once it is there you bring it into the window by pressing the yellow SELECT button. Once the line of text is in the window you can overtype/insert/delete as before. But back to the joystick.

USE OF THE JOYSTICK

UP - Moves all text lines upwards.
DOWN - Moves all text lines downwards.
LEFT - Moves all characters left.
RIGHT - Moves all characters right.
BUTTON- Moves to end of text.

FORMATTING TEXT

The format, or layout, of your text is acheived by the use of control characters embedded in the text. These characters will not appear in the final display/print-out and are used to set such things as margins etc.. The text embedded commands TT now supports are:

CTRL-E : Ends current Line.
CTRL-I : Indents next line (paragraphing).
CTRL-S : Does a line feed (leave blank line).
CTRL-T : Tabs x number of spaces (set when displaying/printing).
CTRL-C : Sets Center Justify Mode (headings).
CTRL-P : Does a forms feed (new page, set when displaying/printing).
CTRL-F : Sets fill justify mode (neat left and right margins).
CTRL-R : Sets right justify mode (neat right margin).
CTRL-L : Sets left justify mode (default)(neat left margin).
CTRL-M : Sets left margin (sequence terminated with "!")(e.g. CTRL-M20!).
CTRL-G : Sets line length (sequence terminated with "!")(e.g. CTRL-G30!).
CTRL-H : Direct printer commands (sequence terminated with "!")(printer users only).

***** TINY TEXT (CONTINUED) *****

VIEWING LAYOUT OF TEXT

Having typed in your text and formatting control characters, the next thing you want to do is to see what it all looks like when it is in its final state. If necessary clear the window by pressing RETURN and then press the yellow OPTION key to get out of EDIT mode.

When you come out of EDIT mode you will then be put in PRINT mode. If you do not have a PRINTER skip this mode by pressing the yellow OPTION key twice. This will put you into DISPLAY mode. The following instructions apply to both PRINT and DISPLAY modes. Firstly follow the instruction and press the yellow START key to begin. TT will then prompt you to SET FORMAT CONTROLS. There are 6 different format controls that you can set and these are initially pre-set to values suitable for DISPLAY mode. You will probably not have to change them unless you are in PRINT mode. The format controls are:

LINE SIZE - Normally 35 (e.g. this text is 110)
LEFT MARGIN- Normally 1 (e.g. this text is 5)
INDENT - Normally 5 (e.g. this text is 5)
TAB STOP - Normally 10 (e.g. this text is 10)
PAGE SIZE - Normally 66 (don't usually worry about this!)
FORM FEED - Normally 6 (happens at end of page).

If you don't want the values listed then over-type them with your desired ones. Use the TAB key to skip from field to field and when ready press RETURN. Your screen will then clear and the text will appear formatted either DISPLAYed on the screen or PRINTed on the printer. When the DISPLAY/PRINT is complete then the screen will switch to LOAD mode (from DISPLAY mode) or to SAVE mode (from PRINT mode).

SAVE MODE

Now that you have everything looking O.K. you really want to save it somewhere. Use the yellow OPTION key to get into SAVE mode and then press the yellow START key to begin. TT will then prompt you to input the FILE name.

If you are saving to cassette then insert your cassette in the Program Recorder and position it ready to start. Type the letter C (N.B. uppercase) for the file name and press RETURN. The key-board will buzz twice as for a normal CSAVE, so just go through the usual routine of RECORD & PLAY buttons on the Recorder and then press RETURN on the keyboard. Your text will then be SAVEd onto the cassette. You can retrieve it later using the LOAD mode (see below).

If you are saving to disc then insert your disc in the disc drive, specify the file name that you are going to use (e.g. D:NEWSART.JUN), and then press RETURN. Your text will then be SAVEd onto the disc.

LOAD MODE

If you have text that has previously been entered into TT and is filed away on a disc or cassette then you can use the LOAD mode to retrieve it.

Use the yellow OPTION key to get into LOAD mode and then press the yellow START key to begin. TT will then prompt you to input the FILE name.

If you are loading from cassette then insert your cassette in the Program Recorder and position it ready to start. Type the letter C (N.B. uppercase) for the file name and press RETURN. The key-board will buzz once as for a normal CLOAD, so just go through the usual routine of PLAY button on the Recorder and then press RETURN on the keyboard. Your text will then be LOADed (before your very eyes!) from the cassette. You can then EDIT/DISPLAY/etc..

If you are loading from disc then insert your disc in the disc drive, specify the file name that the text is filed under (e.g. D:LOVELET.URG), and then press RETURN. Your text will then be LOADed (before your very eyes!) from the disc. You can then EDIT/DISPLAY/etc..

Well thats all there is to it. It takes a bit of practice to get used to but once you get the hang of it TT can be very useful. AND REMEMBER once you have Tiny Text then there is no excuse for not contributing to your Newsletter.

Just TYPE, SAVE, and SEND your articles and then see yourself in PRINT!

KWH.

K.W.H.

W.A.C.E. BITMAPS

DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.
0	□□□□□□□□	0	32	□□■□□□□□	20	64	□■□□□□□□	40	96	□■■□□□□□	60
1	□□□□□□□■	1	33	□□■□□□□■	21	65	□■□□□□□■	41	97	□■■□□□□■	61
2	□□□□□□■□	2	34	□□■□□□■□	22	66	□■□□□□■□	42	98	□■■□□□■□	62
3	□□□□□□■■	3	35	□□■□□□■■	23	67	□■□□□□■■	43	99	□■■□□□■■	63
4	□□□□□■□□	4	36	□□■□□■□□	24	68	□■□□□■□□	44	100	□■■□□■□□	64
5	□□□□□■□■	5	37	□□■□□■□■	25	69	□■□□□■□■	45	101	□■■□□■□■	65
6	□□□□□■■□	6	38	□□■□□■■□	26	70	□■□□□■■□	46	102	□■■□□■■□	66
7	□□□□□■■■	7	39	□□■□□■■■	27	71	□■□□□■■■	47	103	□■■□□■■■	67
8	□□□□■□□□	8	40	□□■□■□□□	28	72	□■□□■□□□	48	104	□■■□■□□□	68
9	□□□□■□□■	9	41	□□■□■□□■	29	73	□■□□■□□■	49	105	□■■□■□□■	69
10	□□□□■□■□	A	42	□□■□■□■□	2A	74	□■□□■□■□	4A	106	□■■□■□■□	6A
11	□□□□■□■■	B	43	□□■□■□■■	2B	75	□■□□■□■■	4B	107	□■■□■□■■	6B
12	□□□□■■□□	C	44	□□■□■■□□	2C	76	□■□□■■□□	4C	108	□■■□■■□□	6C
13	□□□□■■□■	D	45	□□■□■■□■	2D	77	□■□□■■□■	4D	109	□■■□■■□■	6D
14	□□□□■■■□	E	46	□□■□■■■□	2E	78	□■□□■■■□	4E	110	□■■□■■■□	6E
15	□□□□■■■■	F	47	□□■□■■■■	2F	79	□■□□■■■■	4F	111	□■■□■■■■	6F
16	□□□■□□□□	10	48	□□■■□□□□	30	80	□■□■□□□□	50	112	□■■■□□□□	70
17	□□□■□□□■	11	49	□□■■□□□■	31	81	□■□■□□□■	51	113	□■■■□□□■	71
18	□□□■□□■□	12	50	□□■■□□■□	32	82	□■□■□□■□	52	114	□■■■□□■□	72
19	□□□■□□■■	13	51	□□■■□□■■	33	83	□■□■□□■■	53	115	□■■■□□■■	73
20	□□□■□■□□	14	52	□□■■□■□□	34	84	□■□■□■□□	54	116	□■■■□■□□	74
21	□□□■□■□■	15	53	□□■■□■□■	35	85	□■□■□■□■	55	117	□■■■□■□■	75
22	□□□■□■■□	16	54	□□■■□■■□	36	86	□■□■□■■□	56	118	□■■■□■■□	76
23	□□□■□■■■	17	55	□□■■□■■■	37	87	□■□■□■■■	57	119	□■■■□■■■	77
24	□□□■■□□□	18	56	□□■■■□□□	38	88	□■□■■□□□	58	120	□■■■■□□□	78
25	□□□■■□□■	19	57	□□■■■□□■	39	89	□■□■■□□■	59	121	□■■■■□□■	79
26	□□□■■□■□	1A	58	□□■■■□■□	3A	90	□■□■■□■□	5A	122	□■■■■□■□	7A
27	□□□■■□■■	1B	59	□□■■■□■■	3B	91	□■□■■□■■	5B	123	□■■■■□■■	7B
28	□□□■■■□□	1C	60	□□■■■■□□	3C	92	□■□■■■□□	5C	124	□■■■■■□□	7C
29	□□□■■■□■	1D	61	□□■■■■□■	3D	93	□■□■■■□■	5D	125	□■■■■■□■	7D
30	□□□■■■■□	1E	62	□□■■■■■□	3E	94	□■□■■■■□	5E	126	□■■■■■■□	7E
31	□□□■■■■■	1F	63	□□■■■■■■	3F	95	□■□■■■■■	5F	127	□■■■■■■■	7F

K.W.H.

W.A.C.E. BITMAPS

DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.	DEC.	BITMAP	HEX.
128	■□□□□□□□	80	160	■□■□□□□□	A0	192	■■□□□□□□	C0	224	■■■□□□□□	E0
129	■□□□□□□■	81	161	■□■□□□□■	A1	193	■■□□□□□■	C1	225	■■■□□□□■	E1
130	■□□□□□■□	82	162	■□■□□□■□	A2	194	■■□□□□■□	C2	226	■■■□□□■□	E2
131	■□□□□□■■	83	163	■□■□□□■■	A3	195	■■□□□□■■	C3	227	■■■□□□■■	E3
132	■□□□□■□□	84	164	■□■□□■□□	A4	196	■■□□□■□□	C4	228	■■■□□■□□	E4
133	■□□□□■□■	85	165	■□■□□■□■	A5	197	■■□□□■□■	C5	229	■■■□□■□■	E5
134	■□□□□■■□	86	166	■□■□□■■□	A6	198	■■□□□■■□	C6	230	■■■□□■■□	E6
135	■□□□□■■■	87	167	■□■□□■■■	A7	199	■■□□□■■■	C7	231	■■■□□■■■	E7
136	■□□□■□□□	88	168	■□■□■□□□	A8	200	■■□□■□□□	C8	232	■■■□■□□□	E8
137	■□□□■□□■	89	169	■□■□■□□■	A9	201	■■□□■□□■	C9	233	■■■□■□□■	E9
138	■□□□■□■□	8A	170	■□■□■□■□	AA	202	■■□□■□■□	CA	234	■■■□■□■□	EA
139	■□□□■□■■	8B	171	■□■□■□■■	AB	203	■■□□■□■■	CB	235	■■■□■□■■	EB
140	■□□□■■□□	8C	172	■□■□■■□□	AC	204	■■□□■■□□	CC	236	■■■□■■□□	EC
141	■□□□■■□■	8D	173	■□■□■■□■	AD	205	■■□□■■□■	CD	237	■■■□■■□■	ED
142	■□□□■■■□	8E	174	■□■□■■■□	AE	206	■■□□■■■□	CE	238	■■■□■■■□	EE
143	■□□□■■■■	8F	175	■□■□■■■■	AF	207	■■□□■■■■	CF	239	■■■□■■■■	EF
144	■□□■□□□□	90	176	■□■■□□□□	B0	208	■■□■□□□□	D0	240	■■■■□□□□	F0
145	■□□■□□□■	91	177	■□■■□□□■	B1	209	■■□■□□□■	D1	241	■■■■□□□■	F1
146	■□□■□□■□	92	178	■□■■□□■□	B2	210	■■□■□□■□	D2	242	■■■■□□■□	F2
147	■□□■□□■■	93	179	■□■■□□■■	B3	211	■■□■□□■■	D3	243	■■■■□□■■	F3
148	■□□■□■□□	94	180	■□■■□■□□	B4	212	■■□■□■□□	D4	244	■■■■□■□□	F4
149	■□□■□■□■	95	181	■□■■□■□■	B5	213	■■□■□■□■	D5	245	■■■■□■□■	F5
150	■□□■□■■□	96	182	■□■■□■■□	B6	214	■■□■□■■□	D6	246	■■■■□■■□	F6
151	■□□■□■■■	97	183	■□■■□■■■	B7	215	■■□■□■■■	D7	247	■■■■□■■■	F7
152	■□□■■□□□	98	184	■□■■■□□□	B8	216	■■□■■□□□	D8	248	■■■■■□□□	F8
153	■□□■■□□■	99	185	■□■■■□□■	B9	217	■■□■■□□■	D9	249	■■■■■□□■	F9
154	■□□■■□■□	9A	186	■□■■■□■□	BA	218	■■□■■□■□	DA	250	■■■■■□■□	FA
155	■□□■■□■■	9B	187	■□■■■□■■	BB	219	■■□■■□■■	DB	251	■■■■■□■■	FB
156	■□□■■■□□	9C	188	■□■■■■□□	BC	220	■■□■■■□□	DC	252	■■■■■■□□	FC
157	■□□■■■□■	9D	189	■□■■■■□■	BD	221	■■□■■■□■	DD	253	■■■■■■□■	FD
158	■□□■■■■□	9E	190	■□■■■■■□	BE	222	■■□■■■■□	DE	254	■■■■■■■□	FE
159	■□□■■■■■	9F	191	■□■■■■■■	BF	223	■■□■■■■■	DF	255	■■■■■■■■	FF

GET YOUR HEAD STRAIGHT

The line on alignment

by CARL EVANS

One of the most misunderstood things about the poor little 410 cassette recorder is head alignment. Properly aligned heads tend to stay properly aligned, provided the recorder isn't physically moved around a lot. If you leave the recorder sitting in one spot, then the head alignment should be good for a long, long time.

I align the heads on any new 410/1010 before I use the recorder for any critical CSAVEs. Then I check the alignment once or twice a year. So far, none of those that I personally aligned have drifted enough to justify realigning them. The oldest one has seen heavy use for almost two years now. This article will show you how to align the heads in your own recorder. It is extremely easy once you know how.

Service shops typically use some very expensive equipment when they align the heads on your recorder. The total cost of professional equipment could easily run into many hundreds of dollars. You can build your own head-alignment kit for under $50. The things you will need are readily available, once you know what to ask for. A head alignment kit usually consists of the following items:

a. A special "test-tone" cassette.
b. One very small Phillips screwdriver.
c. An AC voltage measurement device (such as a DVM).
d. Several small clip leads or connector pins and some wire.

First, let's look at each of these components in more detail, along with what to use to make up your kit, then I will show you how to align the heads in your 410 (or 1010) recorder very quickly and simply.

The most important item in your head-alignment kit is the test tape. A professional tape typically contains a perfectly aligned recording of a sine wave with a frequency somewhere between 1KHz and 5KHz, or a special mix of such tones. I have seen tapes like that for home stereo systems that might cost you as much as $70. That is too much money for such a tape. Fortunately, I recently ran across an ad in a stereo hobbyist magazine for a head alignment tape selling for $15.99. That is more along the lines of what I would consider reasonable. I got one of these tapes and tried it out on one of my 410 recorders. It worked like a charm! The tape is called the "GEO-TAPE" and is sold by Mobile Fidelity in Chatsworth, California. If you want to contact them, call (213) 789-8440.

I looked at the output of the tape on an oscilloscope to see what was really on it. The tape contains a recording of digitally synthesized "pink noise". In simple terms, this is a mixture of a lot of tones all set at a constant volume. This is nice. The problem with aligning your heads with a single audible tone is that you can set the heads for that tone but still lose the high-frequency signals. Actually, this is more important to music buffs, but in our case it means that we can align the recorder heads for both of the ATARI FSK tones in one fell swoop.

The screwdriver, in this case, consists of one very small Phillips for adjusting the head screw. (A Phillips is also called a "cross-point" screwdriver). You can use any miniature-sized Phillips, but be careful. If the screwdriver is highly magnetized, you could be causing yourself headaches. To test the screwdriver for excessive magnetism, touch the tip to a small paper clip and slowly lift the screwdriver. If the end of the paper clip stays

on the table, then the screwdriver is not "too" magnetic.

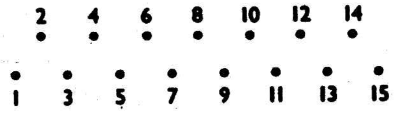
The wire can be any old small gauge wire, such as speaker wire. Multiple-strand wire is usually better than solid wire for this purpose.

You will need either a special connector or some wire to tap into the signal lines of the recorder. Those of you with the ATARI 400 model computer will have to use small stiff wire since you don't have a monitor jack on your computer.

You have two options with the ATARI 800 and only one option with the 400. Lets look first at the one option that is common for both the 400 and the 800.

You can use alligator clips and connector pins (small stiff wire) to jump between the pins on the recorder's I/O connector and the proper pins in the I/O connector on the side of the computer. You can then make your measurements by attaching clip leads to the proper lines. The measurements will be taken from Pin 11 ("+") and Pin 4 (ground).

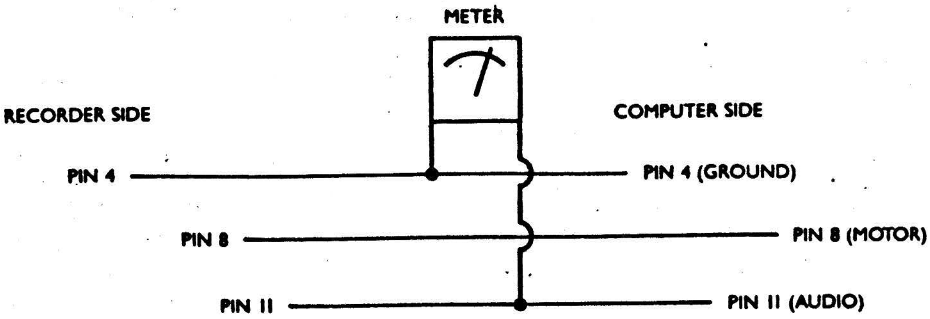
The pin configuration of the serial I/O port on the computer side looks like this:



The configuration of the I/O plug from the recorder is, naturally, the mirror image of this. To make our measurements, it will be necessary to connect three wires. One wire goes from Pin 4 on the computer to Pin 4 into the recorder (this is the ground). One wire connects Pin 8 to Pin 8 (this is the wire that turns the motor on and off). The last wire connects Pin 11 and Pin 11 (this is the audio wire).

We need to measure the voltage between the wires connecting Pins 11 and Pins 4. Scrape through the insulation near the middle of each of these wires so you can take a reading with the leads from the DVM. This reading will give you the strength of the audio channel signal. The motor must be connected so the recorder can play the test tape.

If you have an 800 model, you can bypass all this wire stuff by measuring at the "MONITOR" output plug located on the side of the computer. The "how-to" part of this article will go into further detail. You may want to get a DIN plug with bare-ended wires coming out of it, to make the job easier. See your APX catalog for the 5-pin DIN connector (APX-9002 for $2.49).



The best AC-voltage measurement device to use would be a digital volt meter (DVM), but if you don't have one of them, there are a number of other things you can use. You can use any type of AC-voltage meter. Or, you could use an oscilloscope. You can get these kinds of instruments at your local electronics store. It is also possible to crudely align the heads using your home stereo amplifier by making your measurements on the "VU" or "S" meter located on many amplifiers. If you have a good musical ear, then you could even use the audio playback coming through your TV speaker!

You now have enough information to create your own head-alignment "kit". Now comes the easy part: actually aligning the heads. The following is a step-by-step way of doing it.

HOW TO THE ALIGN THE RECORDER HEADS

1. If you have an ATARI 400, insert jumper wires as discussed earlier between the connectors on your recorder and your computer. You will make your measurements between Pin 11 ("+") and Pin 4 ("–" or ground).

If you have an ATARI 800, plug the recorder into the computer. You can measure the voltage between Pin 3 and Pin 2 of the Monitor output port. Pin 3 is at upper left, and Pin 2 (ground) is at the bottom. A DIN plug makes this access easier. Connect Pin 3 to the + lead of your DVM, and Pin 2 to the minus, or ground on your DVM.

When you have done this, insert the BASIC cartridge into your computer and turn the computer on. Then POKE 54018,52 and POKE 65,0. The first POKE turns on the cassette motor so you can playback the contents of the audio channel on a cassette. The second POKE makes sure you don't get any noise from the digital channel. Now put the alignment tape in the recorder and listen for the odd hiss it makes to verify that you are getting a reading on your meter or scope. If you are using your stereo, then make sure you can hear the tape noise over your speakers. When you are satisfied that all of the connections are good, then POKE 54018,60 to turn the cassette motor back off.

2. Now take a razor blade or some other thin flat instrument and gently pry the label off of your recorder. This label is the one that says "REC PLAY REWIND" etc. When you have removed this thin metal plate, you will discover a Phillips head screw and a small hole. Ignore the screw and look down into the hole. You will see a tiny Phillips head screw inside the recorder. Now press the PLAY button on the recorder. Notice how the small screw moves toward the back of the recorder, almost, but not quite, out of reach. This is the screw you will have to adjust.

3. Press the STOP/EJECT button on the recorder. Now insert the GEO-TAPE (or other test tape) in the recorder and rewind the tape. Lightly press the STOP/EJECT button to reset the recorder switches. When you are all set, turn the computer on. Now POKE 54018,52 to turn the cassette motor on and POKE

continued on next page

65,0 to disable any input sounds from the digital track. (The GEO-TAPE has pink noise on both stereo tracks with the two signals being exactly 180 degrees out of phase with one another.)

4. When the test tone starts up, notice the reading on the DVM and write the voltage down. When you have got a good feel for the average voltage level, then rewind the tape and play the test tone again.

5. This time, when you hear the test tone, try turning the head adjustment screw clock-wise a tiny little bit. It doesn't take much. Look at the DVM reading. If the voltage level decreased, then turn the screw the other way.

6. Repeat the screw adjustment, rewinding the tape as necessary, until you have found the point that gives you a MAXIMUM reading. When you have found that point, the heads will be in proper alignment.

7. The glue used under the label plate is probably dry and crusty, so you mos likely will have to use some fresh glue t stick the label back on your recorder. B careful not to get glue down the adjustment hole!

A few final words on aligning you heads. Don't do it more than once o twice a year. The heads, once aligned properly, will stay aligned through many hundreds of hours of use. Don't believe anyone who tells you anything different.

Tangle Angles

I have built an FSK-to-Digital Translator, and am advertising it in ANTIC (June, July, August, 1983). This allows me to SAVE and LOAD tapes with my Technics M24 stereo cassette deck rather than with my 410, and after working out the kinks I have recorded 100 programs and suffered no errors. Your readers may be interested in some of my discoveries enroute.

Using my Translator, I still experienced occasional ERRORs 138, 140 and 143. I compared the digital and FSK waveforms and found they did match; therefore, the computer was somehow to blame. I checked the FSK signals (3995 hz and 5327 hz) coming from the computer and found them accurate to within 1/100 of one percent. Most of my errors were occurring at the beginning of CLOADs, so I suspected the initialization sequence.

I examined the programs I knew to be good and compared them to ones I knew were bad. On good tapes the leader signal was always 5327 hz, whereas the bad ones were a hissing combo of 3995 and 5327 hz, with the 3995 hz signal dominant. This confused the computer and apparently caused the problems. Reviewing my programming practices, I found that using [SYSTEM RESET] had caused the problems. After a [RESET], the computer seems to lose its ability to begin a CSAVE routine with clean 5327 hz.

Next I added an LED to my Translator to verify recording quality during CSAVE. Now, if you are in the process of recording and the LED indicates a bad load — you can clear the situation without turning off the computer. Press [BREAK], turn off your printer (or interface), type LPRINT [RETURN], rewind your tape and try the CSAVE again. The LPRINT clears the cassette buffer and resets the pointers correctly.

Steve Wolfe
Essence Peripheral
Atlanta, GA

I am sure our readers will be very interested in your new FSK-to-Digital converter. The technical analysis and solutions you describe are also very interesting.

You've mentioned that no one markets an FSK to Digital Translator. I didn't want to spend another $100 for the 410 when I already owned two reasonable recorders; one stereo, the other monaural, so I designed and built my own interface. It allows me to use either a monaural or stereo player/recorder and is 410 compatible. The only restriction is that anything recorded on the audio channel interferes with the data channel when played back on a monaural, which is to be expected.

Don Larson
Denver, CO

Yes I would like to see your FSK-to-Digital converter. I believe that there is one now on the market (see letter above).

If you are not going to market the one you have, I suggest you write an article for us showing exactly what you did. We would be happy to publish such an article in this department.